

REMARKS

Claims 1 to 8 and 11 to 24 remain in this application. Claims 1 and 22 have been amended to introduce the phrase "wherein said composition has been extruded". Applicants refer to the Examples where, in an illustration of the invention, the compositions are extruded to provide a product which is thus necessarily substantially homogeneous, as distinguished from art cited by the Examiner. Applicants also introduced amendments to insert the concentrations of claim 10 into claims 1 and 22 and to delete claims 9 and 10. Finally, applicants refer to the attached Plastics Additives Handbook document which teaches that whiteness may be affected by the presence of UV absorbers.

I. Rejection of claims 6, 7, and 8 under 35 U.S.C. § 103(a)

Claims 6, 7, and 8 are rejected under 35 U.S.C. 103(a) as allegedly obvious in view of U.S. Patent No. 6,177,574. In particular, the Examiner states:

Applicants' claims 6, 7 and 8 disclose the use of benzoxazole, particularly benzoxazolyl stilbene and more particularly the use of 4,4 bis-2-benzoxazolyl-stilbene. Note, however, that US 6117574 discloses a process for the preparation of a mixture of benzoxazolyl-stilbene compounds by the reaction of unsubstituted 4,4'-bis(benzoxazol-2-yl)stilbene compounds with a substituted o-aminophenol or o-aminonaphthol to obtain a mixture comprising the unsubstituted 4,4'-bis(benzoxazol-2-yl-4'-benzoxazol-2-ylstilbene and/or 4,4'-bis(naphthothoxazol-2-yl)stilbene. The reference clearly states therein that these mixtures are useful as fluorescent brightening agents and light stabilizers for synthetic polymeric materials such as polyesters, polyamide and polyolefin textile materials and shaped articles.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the particularly brighteners as claimed by applicants in the polyester composition since the reference US 6177574 discloses that the mixtures of unsubstituted and substituted 4,4'-bis(benzoxazol-2-yl)stilbene compounds are more effective than the unsubstituted compound for certain end uses, e.g., for topical application to textile materials such as fibers, filaments and fabrics prepared from polyesters.

In response, applicants refer to the Summary of the Invention, where it is noted that in one embodiment, the invention provides a polymer composition comprising (a) a polyester; (b) at least one ultraviolet absorber; and (c) at least one optical brightener in a concentration of greater than 0.0004 wt%, based on the total weight of the polyester composition; wherein said composition is comprised of no more than 5 weight percent of polymers which are other than polyesters; wherein said composition is effective at screening of at least 85% of the light of wavelengths of 290-390 nm.

Thus, the invention provides a UV blocking composition which is comprised of both an optical brightener and a UV absorber, in proportions and concentrations which provide effective screening of light of wavelengths of 290-390 nm, without adding significant undesirable color to the composition. The cited patent merely describes certain optical brightener compounds and their preparation; the cited patent does not disclose a UV absorber as part of a polymer composition in conjunction with the optical brightener as claimed herein. Moreover, applicants note that only sub-claims 6, 7 and 8 have been rejected in view of this document, and thus assert that patentability rests upon claims upon which 6, 7 and 8 are ultimately dependent, which are not rejected in view of this document. In other words, applicants assert that claim 1, which is not rejected in view of the '574 patent, is patentable; thus, claims which ultimately depend from claim 1, which are by definition more narrow, are patentable as well, insofar as the cited document does not provide the requisite motivation to reach the claimed invention.

II. Rejection of claim 24 under 35 U.S.C. § 103 over U.S. Patent No. 4,882,412

Claim 24 is rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent No. 4,882,412. In particular, the Examiner states:

"With regard to claim 24, the reference discloses a polyester polymer containing the residue of the UV absorbing benzo-derivative compound and shaped articles

produced therefrom by applicants except for the particular use for container for foodstuffs or beverages.

However, US 4882412 discloses that many products such as certain fruit juices, soft drinks, wines, food products, cosmetics and shampoos are deleteriously affected, i.e., degraded, by ultraviolet (UV) light when packaged in clear plastic containers which pass significant portions of the available light at wavelengths in the range of approximately 250 to 390nm. Polyesters commonly used in the manufacture of packaging materials such as poly(ethylene terephthalate) typically absorb ultraviolet radiation of wavelengths up to about 320. Thus, effective UV screening agents should absorb a substantial amount, e.g., up to about 90%, of ultraviolet light up to 390nm, especially up to about 370nm. The reference US 4882412 further states that it is well known that polymers can be rendered resistant to degradation by UV light by physically blending in such polymers various UV light stabilizers such as benzophenones, benzotriazoles and resorcinol monobenzoates.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the composition as claimed by applicants for the purpose of protecting foodstuffs and beverages since the reference US 4882412 notes that many products are well known to be deleteriously affected by ultraviolet degradation and any other container which provides protection of said foodstuffs or beverage would be obvious and desirable."

In response, applicants note that the '412 patent does not teach the *combination* of a UV absorber with an optical brightener as claimed in the present case. Thus, the mere presence of teaching of the use of a UV absorber in a packaging material would not provide one of ordinary skill in the art with the requisite motivation to reach the claimed invention.

III. Rejection of Claims 1, 2, 3-5, 9-15, 17, 19-21, 22, 23 under 35 U.S.C. 102(a) over U.S. Patent No. 6,773,104

Claims 1, 2, 3-5, 9-15, 17, 19-21, 22, 23 under 35 U.S.C. 102(a) over U.S. Patent No. 6,773,104. In particular, the Examiner states:

"With regard to applicants' claims 1 and 22, USP 6773104 recognizes that ultraviolet rays from the sun or from man-made sources degrade many materials by breaking their molecular bonds and thus discloses a solution to this problem

via a two-layered coating system containing a polyester resin and using an ultraviolet absorber in its inner layer (called the blocking layer), furthest away from the source of ultraviolet exposure, with a fluorescent material that reflects ultraviolet radiation back as blue light. The system provides the desired protection by combining an optical brightener with an ultraviolet radiation absorber which raises the cutoff wavelength and increases blue light, rather than absorbing blue light as a longer wavelength cutoff ultraviolet absorber would normally do. The reference recognizes that by preventing ultraviolet radiation from reaching materials and surfaces, the weatherability and resistance to physical degradation is greatly improved.

The ultraviolet absorber in the inner layer is used in sufficient concentration to have an ultraviolet cutoff, which can be extended with the fluorescent material. The ultraviolet block material of the present invention has transmittance of the light within a range of wavelength of 300-380nm of 10% or less, preferably transmittance of the light within a range of wavelength of 300-390 nm of 10% or less, and, particularly preferably, transmittance of the light within a range of 300-800 nm wavelength of 90% or more, or, preferably, 95% or more.

The reference discloses optical brighteners. Typical optical brighteners disclosed are disulphonates, tetrasulphonates, and hexasulphonates. These are water soluble optical brighteners. Such optical brighteners are typically used in textiles at very low concentrations of less than one percent by weight and their purpose is to reduce the yellowness of a material, dye, plastic, etc. The present invention provides the desired protection by combining an optical brightener with an ultraviolet radiation absorber which raises the cutoff wavelength and increases blue light, rather than absorbing blue light as a longer wavelength cutoff ultraviolet absorber would ordinarily do.

With regard to claims 3, 4 and 5 note that the reference discloses that examples of a fluorescent material are materials of a diamino stilbene type, an imidazole type, a thiazole type, an oxazole type (such as 2,5-bis[5-tert-butylbenzoxazol-2-yl]thiophene, a triazole type, an oxadiazole type, a thiadiazole type, a *coumarin* type, a naphthalimide type, a pyrazoline type, a pyrene type, an imidazolone type, a benzidine type, a diaminocarboazole type, an oxacyanine type, a methane type, a pyridine type, an anthrapyridazine type, a distyryl type and a carbostyryl type and the like. Preferably, an oxazole type is used. With regard to an ultraviolet radiation absorber, that which mainly absorbs the light within a range of 300-380 nm may be exemplified and that of a benzophenone type, a benzotriazole type, a salicylic acid type and a hydroquinone type can be used. Preferably, a benzophenone type and a benzotriazole type are used and, particularly preferably, a benzotriazole type is used.

With regard to the amount of ultraviolet light absorber and the optical brightener employed as noted in applicants' claims 9 through 15, note the reference states

that the of the ultraviolet radiation absorber used for the base material is usually not less than 5% by weight, preferably not less than 6% by weight or, more preferably not less than 5% by weight, preferably not less than 6% by weight or, more preferably not less than 10% by weight and usually not more than 30% by weight or, preferably, not more than 25% by weight. When the amount of the ultraviolet radiation absorber is too small, it is not possible to make the light transmittance of ultraviolet region 10% or less while, when it is too much, there is a possibility that the ultraviolet radiation absorber bleeds out. Further, the amount of the fluorescent material contained for the base material is usually not less than 3% by weight, preferably not less than 6% by weight or, more preferably, not less than 10% and usually not more than 30% by weight or, preferably, not more than 25% by weight. When the amount of the fluorescent material is too small, it is not possible to make the light transmittance of ultraviolet region of not shorter than 380 nm 10% or less while, when it is too much, there is a possibility that the fluorescent material bleeds out.

With regard to applicants' claims 17, 19-21, note that the reference states throughout that a film may be produced and employed. Further, the substrate itself, may be anything which has been known and has some heat resistance and strength. Its examples include polyester film such as polyethylene terephthalate, polystyrene film, polypropylene film, polysulfone film, polyphenylsulfide film and polyethylene naphthalate film and preferred ones are polyester film, paraffin paper, glassine paper and condenser paper. Among the polyester film, particularly preferably used one is a polyethylene terephthalate film. Such a substrate may be either in a sheet or in a continuous film. Examples of the base material constituting the ultraviolet block material are synthetic resin, oil, gelatin and starch, which are not colored at the visible light region, and, form a resin layer as a result of drying and/or hardening when applied on a substrate. To be more specific, polyester resin, polystyrene resin, acrylate resin, polyurethane resin, acrylurethane resin, vinyl chloride resin, polyamide resin, vinyl acetate resin, epoxy resin, phenoxy resin, and cellulose type resin may be exemplified.

Thus the reference discloses a composition comprising each of the components as noted by applicants, i.e. a polyester, an ultraviolet absorber and an optical brightener with the appropriate concentrations therein. With regard to applicants' claims 2 and 23, any properties or characteristics inherent in the prior art, e.g. CIE b* value, although unobserved or detected by the reference, would still anticipate the claimed invention. Note *In re Swinehart*, 169 USPQ 226. "It is elementary that the mere recitation of a newly discovered . . . property, inherently possessed by things in the prior art, does not cause claim drawn to those things to distinguish over the prior art". Thus in view of the above, there appears to be no significant difference between the reference and that which is claimed by applicant(s). Any differences not specifically mentioned appear to be conventional. Consequently, the claimed invention cannot be deemed as novel and accordingly is unpatentable.

In response, applicants note that the '104 patent is limited in its teaching to an ultraviolet filter coating which is a two-layer system. Applicants also assert, that by insertion of the phrase "wherein said composition has been extruded" provides a distinguishing feature for the compositions of the present invention over the teaching of the '104 patent, thus rendering the maintenance of the rejection under 35 USC 102(a) untenable insofar as by being extruded, the composition is necessarily substantially homogeneous – a composition far removed from the two-layer UV filter *coating* composition of the '104 patent.

Unlike the '104 patent, the intent of the present invention is not to increase blue light. This is clearly the intent of the '104 patent by having the optical brightener in the outer layer where it is not shielded from UV absorption by the ultraviolet absorber. By combining the optical brightener and ultraviolet absorber, as in our case, we are minimizing blue light, not increasing it. The potential deleterious effect of ultraviolet absorbers on OB performance is noted in *Plastics Additives Handbook*, 5th ed, Dr. H. Zweifel, ed, Verlag, Munich pp885-886 (2001).

Moreover, the use of a single layer represents a simpler, lower-cost solution to providing ultraviolet screening; with this approach, such concerns as adhesion of the two layers and migration of additives from one layer to another are eliminated.

Finally, applicants refer to the amendments to claim 1 and 22 which introduce the concentrations of the optical brightener and the UV absorber from original claim 10, thus placing the upper limit for the optical brightener at approximately an order of magnitude less than that taught in the '104 patent. (See column 13, lines 42 and following.)

In summary, applicants request entry of the above amendments, consideration of the remarks and passage of the application to issuance. A petition for a three month extension of time is enclosed.

Respectfully submitted,

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I hereby certify that this paper (along with any referred to as being attached or enclosed) is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Kristi D. Huff
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